

## G. North Coast Air Basin

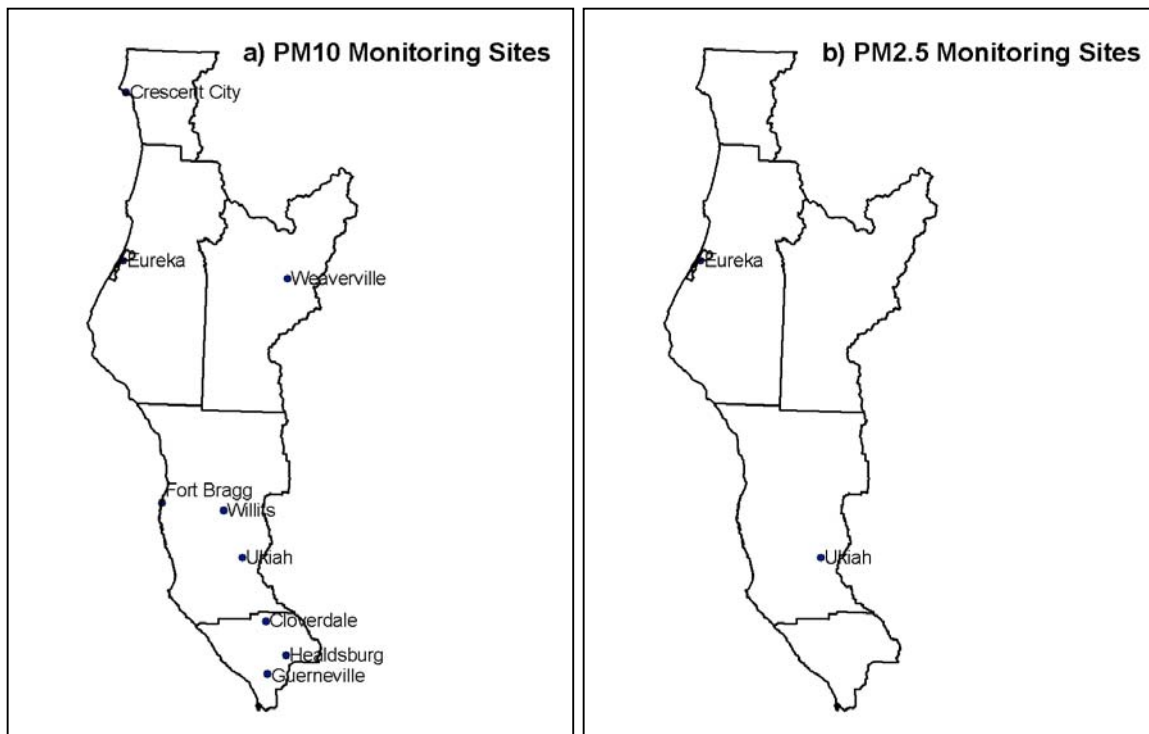


The North Coast Air Basin is comprised of three air districts, the North Coast Unified AQMD, the Mendocino County AQMD, and the Northern Sonoma County APCD. The North Coast AQMD includes El Norte, Humboldt, and Trinity Counties; the Mendocino County AQMD consists of Mendocino County; and the Northern Sonoma County APCD comprises the northern portion of Sonoma County.

The entire air basin is currently designated as nonattainment for the State 24-hour and annual average PM<sub>10</sub> standards. The air basin is designated as unclassified for the State annual PM<sub>2.5</sub> standard – available data are insufficient to support designation as attainment or nonattainment.

Figure G-1 shows the PM<sub>10</sub> (a) and PM<sub>2.5</sub> (b) monitoring sites throughout the North Coast Air Basin.

**Figure G-1. PM<sub>10</sub> and PM<sub>2.5</sub> Monitoring Sites throughout the Air Basin.**



## **North Coast Unified AQMD**

Table G-1 provides information on the yearly variations in the highest PM10 and PM2.5 concentrations recorded across the North Coast Unified AQMD in 2001 through 2003. During 2001, particulate levels are estimated to have exceeded the 24-hour State PM10 standard of 50 ug/m<sup>3</sup> 13 times. Although data are insufficient to determine the calculated days exceeding the State 24-hour PM10 standard in 2002 and 2003, from at least 45 out of the 60 scheduled days with measured PM concentrations in each year, two days in 2002 and four days in 2003 exceeded the standard. In 2001, particulate levels also exceeded the State annual PM10 standard of 20 ug/m<sup>3</sup>. PM2.5 concentrations did not exceed the State PM2.5 annual standard of 12 ug/m<sup>3</sup> in 2001, however, data were insufficient to determine if this was also the case in 2002 and 2003.

**Table G-1. PM10 and PM2.5 Air Quality in the North Coast Unified AQMD.**

Year	PM10 (ug/m <sup>3</sup> )			PM2.5 (ug/m <sup>3</sup> )	
	Calculated Days over State Std.	Max 24-hour (Std.=50)	Max Annual Average (Std.=20)	Max* 24-hour	Max Annual Average (Std.=12)
2001	13	72	21	33	9
2002	Incomplete Data	53	Incomplete Data	24	Incomplete Data
2003	Incomplete Data	71	Incomplete Data	36	Incomplete Data

\* The maximum 24-hour PM2.5 values are provided for information only.

Table G-2 provides the 24-hour and annual designation values for the State standards for the 2001-2003 period. Designation values represent the highest 24-hour PM10 concentration measured during the three year period, after concentrations measured during highly irregular and infrequent events have been excluded, and the highest estimated PM10 and PM2.5 annual average in the same period. The designation values are determined for each site, and the highest site is used for determining an area's designation. Based on these data, the North Coast Unified AQMD currently is nonattainment for both the State 24-hour and annual average PM10 standards. The District is designated as unclassified for the State annual PM2.5 standard – available data are insufficient to support designation as attainment or nonattainment.

**Table G-2. Air District Level Designation Values\* for the State PM10 and PM2.5 Standards (2001-2003 Period).**

	PM10 (ug/m <sup>3</sup> )		PM2.5 (ug/m <sup>3</sup> )
	24-Hour (Std.=50)	Annual Average (Std.=20)	Annual Average (Std.=12)
Designation Value	72	21	Incomplete Data

\* Designation value is the value used for determining attainment status. It is the highest measured value over three years after excluding highly irregular or infrequent events.

Table G-3 provides designation values for each monitoring site in the air district to provide further information on the geographic distribution of concentrations. The data show that the Eureka site exceeded both the State 24-hour and the annual PM10 standards, while the Crescent City site did not. Although complete data are not available for all years, annual average PM2.5 concentrations at Eureka are below the State PM2.5 standard.

**Table G-3. Monitoring Site Level Designation Values\* for State PM10 and PM2.5 Standards (2001-2003 Period).**

Site	PM10 ( $\mu\text{g}/\text{m}^3$ )		PM2.5 ( $\mu\text{g}/\text{m}^3$ )
	24-Hour (Std.=50)	Annual Average (Std.=20)	Annual Average (Std.=12)
Crescent City	48	17	No Monitor
Weaverville	72	Incomplete Data	No Monitor
Eureka	71	21	9

\* Designation value is the value used for determining attainment status. It is the highest measured value over three years after excluding highly irregular or infrequent events.

**Figure G-2. Seasonal Variation in PM10 and PM2.5 Concentrations.**

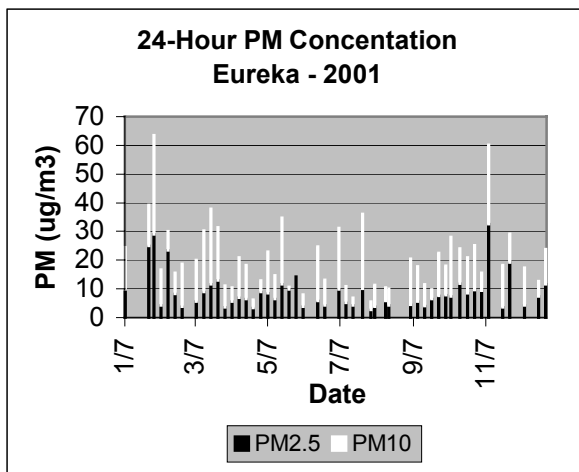


Figure G-2 illustrates the variation in daily PM10 and PM2.5 levels throughout 2001 at Eureka. The total height of the bars represents PM10 concentrations, while the height of the black portion of the bars represents the PM2.5 fraction. PM10 and PM2.5 levels are highest during the late fall and the winter. Colder, more stagnant conditions during this time of the year are conducive to the buildup of PM, including the formation of secondary ammonium nitrate. In addition, increased activity from residential

wood combustion may also occur.

During the rest of the year, the coarse fraction (particles between PM2.5 and PM10 in size) is more prominent. The coarse fraction is primarily due to activities that resuspend dust, such as emissions from paved and unpaved roads and construction. In some coastal sites, sea salt can also contribute to the coarse fraction. Based on 2000-2003 monitoring data, we estimate that PM2.5 comprises approximately 50 percent of ambient PM10 during the fall and winter and 35 percent during the spring and summer. On an annual average basis, PM2.5 contributes approximately 43 percent of PM10.

Although no chemical composition data is available, based on similarities with the San Francisco Bay Area and northern Sacramento Valley air basins, we estimate that secondary ammonium nitrate and sulfate comprises approximately 30 percent of PM<sub>2.5</sub>.

## **Mendocino County AQMD**

Table G-4 provides information on the yearly variations in the highest PM10 and PM2.5 concentrations recorded across the Mendocino County AQMD in 2001 through 2003. During this period, particulate levels are estimated to have exceeded the State 24-hour PM10 standard of 50 ug/m<sup>3</sup> 61 times. PM10 levels also consistently exceeded the State annual PM10 standard of 20 ug/m<sup>3</sup>. Annual PM2.5 levels in 2002 and 2003 were well below the State PM2.5 standard of 12 ug/m<sup>3</sup>.

**Table G-4. PM10 and PM2.5 Air Quality in the Mendocino County AQMD.**

Year	PM10 (ug/m <sup>3</sup> )			PM2.5 (ug/m <sup>3</sup> )	
	Calculated Days over State Std.	Max 24-hour (Std.=50)	Max Annual Average (Std.=20)	Max 24-hour*	Max Annual Average (Std.=12)
2001	24	64	25	38	Incomplete Data
2002	12	72**	23	60	9
2003	25	67	22	16	7

\* The maximum 24-hour PM2.5 values are provided for information only.

\*\* This value is excluded for determining attainment status. See text.

Table G-5 provides the 24-hour and annual designation values for the State standards for the 2001-2003 period. Designation values represent the highest 24-hour PM10 concentration measured during the three year period, after concentrations measured during highly irregular and infrequent events have been excluded, and the highest estimated PM10 and PM2.5 annual average in the same period. For example, the maximum 24-hour PM10 concentration in 2002 shown in Table G-4 was identified as an extreme concentration event and was excluded in determining the designation values shown in Table G-5. The designation values are determined for each site, and the highest site is used for determining an area's designation. Based on these data, the Mendocino County AQMD currently is nonattainment for both the State 24-hour and annual average PM10 standards. The District is designated as unclassified for the State annual PM2.5 standard – available data are insufficient to support designation as attainment or nonattainment.

**Table G-5. Air District Level Designation Values\* for the State PM10 and PM2.5 Standards (2001-2003 Period).**

	PM10 (ug/m <sup>3</sup> )		PM2.5 (ug/m <sup>3</sup> )
	24-Hour (Std.=50)	Annual Average (Std.=20)	Annual Average (Std.=12)
Designation Value	67	25	Incomplete Data

\* Designation value is the value used for determining attainment status. It is the highest measured value over three years after excluding highly irregular or infrequent events.

Table G-6 provides designation values for each monitoring site in the air district to provide further information on the geographic distribution of concentrations. The PM<sub>10</sub> monitor at Fort Bragg exceeded both the annual and State 24-hour PM<sub>10</sub> standards, while the monitors at Ukiah and Willits did not. Although complete data are not available for all years, annual average PM<sub>2.5</sub> concentrations at Eureka are below the State PM<sub>2.5</sub> standard.

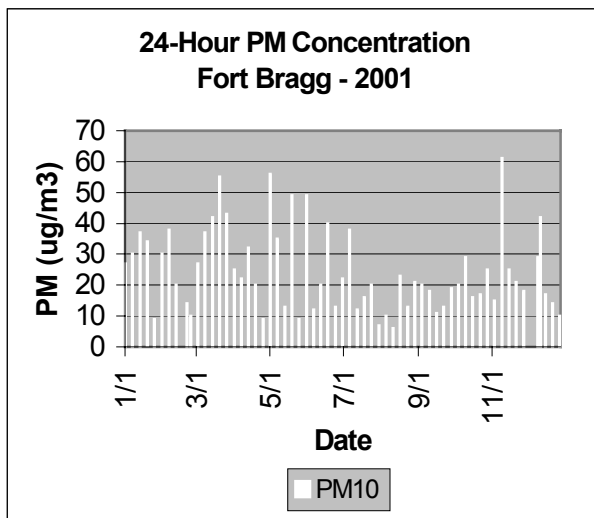
**Table G-6. Monitoring Site Level Designation Values\* for State PM<sub>10</sub> and PM<sub>2.5</sub> Standards (2001-2003 Period).**

Site	PM <sub>10</sub> (ug/m <sup>3</sup> )		PM <sub>2.5</sub> (ug/m <sup>3</sup> )
	24-Hour (Std.=50)	Annual Average (Std.=20)	Annual Average (Std.=12)
Fort Bragg	67	25	No Monitor
Ukiah	46	18	9
Willits	50	19	No Monitor

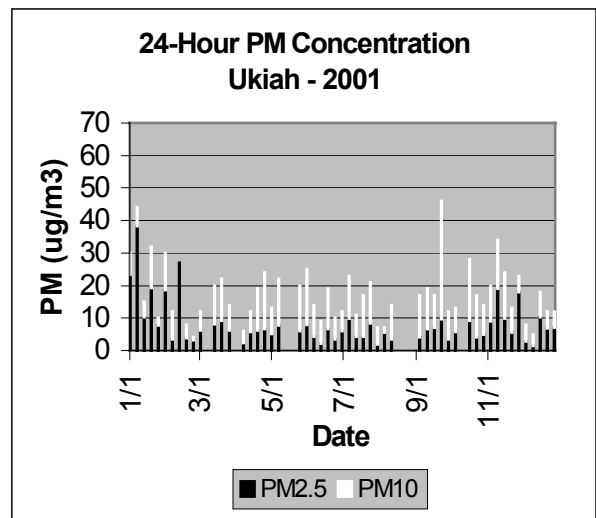
\* Designation value is the value used for determining attainment status. It is the highest measured value over three years after excluding highly irregular or infrequent events.

Figure G-3 illustrates the variation in daily PM<sub>10</sub> levels throughout 2001 at Fort Bragg, while Figure G-4 shows the variation in PM<sub>10</sub> and PM<sub>2.5</sub> at Ukiah. The total height of the bars represents PM<sub>10</sub> concentrations, while the height of the black portion of the bars represents the PM<sub>2.5</sub> fraction. At Fort Bragg, higher PM<sub>10</sub> levels occur during the spring through early summer and from the late fall through the winter. At Ukiah, PM<sub>10</sub> and PM<sub>2.5</sub> concentrations are also highest during the late fall and winter. Colder, more stagnant conditions during this time of the year are conducive to the buildup of PM, including the formation of secondary ammonium nitrate. In addition, increased activity from residential wood combustion may also occur.

**Figure G-3. Seasonal Variation in PM<sub>10</sub> Concentrations.**



**Figure G-4. Seasonal Variation in PM<sub>10</sub> and PM<sub>2.5</sub> Concentrations.**



During the rest of the year, the coarse fraction (particles between PM<sub>2.5</sub> and PM<sub>10</sub> in size) is more prominent, with peak concentrations occurring in the early fall. The coarse fraction is primarily due to activities that resuspend dust, such as emissions from paved and unpaved roads and construction. In some coastal sites, sea salt can also contribute to the coarse fraction. Based on 2000-2003 monitoring data, we estimate that PM<sub>2.5</sub> comprises approximately 58 percent of ambient PM<sub>10</sub> from November-January and 43 percent during the rest of the year. On an annual average basis, PM<sub>2.5</sub> contributes approximately 48 percent of the PM<sub>10</sub> levels.

Although no chemical composition data is available, based on similarities with the San Francisco Bay Area and northern Sacramento Valley air basins, we estimate that secondary ammonium nitrate and sulfate comprises approximately 30 percent of PM<sub>2.5</sub>.

## **Northern Sonoma County APCD**

Table G-7 provides information on yearly variations in the highest PM<sub>10</sub> and PM<sub>2.5</sub> concentrations recorded in the Northern Sonoma County APCD in 2001 through 2003. During 2001, particulate levels exceeded the State 24-hour PM<sub>10</sub> standard of 50 ug/m<sup>3</sup>. Although data are insufficient to determine the calculated days exceeding this standard in 2001, from 31 out of the 60 scheduled days with measured PM concentrations one day exceeded the standard. During the 3-year period, particulate levels did not exceed the State annual standard of 20 ug/m<sup>3</sup>. No PM<sub>2.5</sub> monitor is in operation in the air district.

**Table G-7. PM<sub>10</sub> and PM<sub>2.5</sub> Air Quality in the Northern Sonoma APCD.**

Year	PM <sub>10</sub> (ug/m <sup>3</sup> )			PM <sub>2.5</sub> (ug/m <sup>3</sup> )	
	Calculated Days over State Std.	Max 24-hour (Std.=50)	Max Annual Average (Std.=20)	Max 24-hour	Max Annual Average (Std.=12)
2001	Incomplete Data	63	Incomplete Data	No Monitor	
2002	0	37	16		
2003	0	45	15		

Table G-8 provides the 24-hour and annual designation values for the State standards for the 2001-2003 period. Designation values represent the highest 24-hour PM<sub>10</sub> concentration measured during the three year period, after concentrations measured during highly irregular and infrequent events have been excluded, and the highest estimated PM<sub>10</sub> and PM<sub>2.5</sub> annual average in the same period. The designation values are determined for each site, and the highest site is used for determining an area's designation. Based on these data, the Northern Sonoma County APCD currently is nonattainment for the State 24-hour PM<sub>10</sub> standard. The District is designated as unclassified for the State annual PM<sub>2.5</sub> standard – available data are insufficient to support designation as attainment or nonattainment.

**Table G-8. Air District Level Designation Values\* for the State PM<sub>10</sub> and PM<sub>2.5</sub> Standards (2001-2003 Period).**

	PM <sub>10</sub> (ug/m <sup>3</sup> )		PM <sub>2.5</sub> (ug/m <sup>3</sup> )
	24-Hour (Std.=50)	Annual Average (Std.=20)	Annual Average (Std.=12)
Designation Value	63	Incomplete Data	No Monitor

\* Designation value is the value used for determining attainment status. It is the highest measured value over three years after excluding highly irregular or infrequent events.

Table G-9 provides designation values for each monitoring site in the air district to provide further information on the geographic distribution of concentrations. PM10 levels exceeded the State 24-hour PM10 standard at Cloverdale and Guerneville, but not at Healdsburg. Data were insufficient to determine if the PM10 annual standard was exceeded at the other two monitors.

**Table G-9. Monitoring Site Level Designation Values\* for the State PM10 and PM2.5 Standards (2001-2003 Period).**

Site	PM10 ( $\mu\text{g}/\text{m}^3$ )		PM2.5 ( $\mu\text{g}/\text{m}^3$ )
	24-Hour (Std.=50)	Annual Average (Std.=20)	Annual Average (Std.=12)
Cloverdale	62	Incomplete Data	No Monitor
Guerneville	63	Incomplete Data	No Monitor
Healdsburg	34	16	No Monitor

\* Designation value is the value used for determining attainment status. It is the highest measured value over three years after excluding highly irregular or infrequent events.

**Figure G-5. Seasonal Variation in PM10 Concentration.**

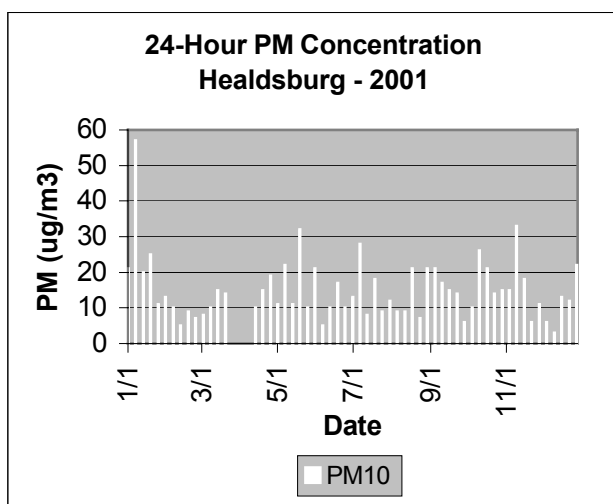


Figure G-5 illustrates the variation in PM10 concentrations throughout 2001 at Healdsburg. The highest PM10 concentration occurred during the winter, with no distinct seasonal pattern across the remainder of the year.

Although no PM2.5 monitor is operated in the air district, based on information from other sites in the air basin, we estimate that on an annual average basis, PM2.5 contributes

approximately 43 percent of PM10. In addition, although no chemical composition data is available, based on similarities with the San Francisco Bay Area and northern Sacramento Valley air basins, we estimate that secondary ammonium nitrate and sulfate comprises approximately 30 percent of PM2.5.